editor of the *Kolloid-Zeitschrift.* Wolfgang Ostwald possesses in no small degree the literary facility of his father; and although this facility leads sometimes to an over-wordiness of expression, the author has had considerable success in directing the attention of wide circles of workers to the importance of the study of colloids.

Although the third German edition, from which the first English translation was made, was published in 1912, the translation was not published until 1915. It will be understood, therefore, that the publishers and translator were placed in a position of some difficulty when they had to meet the demand for a new edition of the English version of the work. To issue merely a reprint would have meant the continuance for some years of a book which at the time of its first appearance was already somewhat out of date; and to obtain a revision of the book by the author was impossible owing to the existence of a state of war. A compromise was therefore adopted, the cooperation of Mr. E. Hatschek was obtained, and an attempt was made to revise and bring up to date the original translation. The translators have sought to meet the situation "by leaving entirely untouched those large portions of the volume which contain the author's individual views, to correct errors in quotation and in mathematical formulæ, and to add" (by the pen of Mr. Hatschek) "numerous paragraphs intended to bring to the reader various important advances in colloid-chemistry which have been made since 1912, especially such as have to do with the mechanical properties of colloids, more particularly their viscosity." The reviewer must confess that he is not impressed by the success of the attempted revision.

It is to be regretted, in the first place, that the translators have not indicated more clearly the additions which have been made, but it would appear, from such comparison with the first edition as the reviewer has been able to carry out, that the additions are confined, essentially, to two sections on "Rate of Shear and Viscosity of Emulsoids" and "Theory of Viscosity of Emulsoids." These two sections, by an active worker in this domain, are valuable and have been satisfactorily incorporated in the work. Sentences have also been added here and there, but the book, as a whole, can scarcely claim to be up to date; and it is to be regretted that the translators did not seek more fully a way out of their difficulties by more numerous footnote references to the recent literature. Apart from those in the new sections added by Mr. Hatschek, the reviewer has noticed only about half a dozen references to literature published since the date of the first edition. The translation has, in several particulars, been improved. "Dispersion medium," for example, has been substituted for "dispersion means," but it seems a pity to retain the expression "internal friction" for "viscosity," and a still greater pity to make use of both terms in a somewhat haphazard manner. "Molecular kinetic" could, with advantage, be everywhere substituted for "moleculo-kinetic," and experimental "results" would be more pleasing, to an English ear at least, than experimental "findings."

Apart from the criticism which has been offered, the book is a very useful one both for the specialist student of colloids and for the large number of workers in the various domains of science and industry in which colloids are now recognised as playing an important part. A survey of the more important features of colloid-chemistry is here presented in an interesting and readable, although sometimes rather too diffuse, form; and the book furnishes a good introduction to a more detailed and special study of the subject. The work does not, however, claim to be exhaustive, and the translators, by rendering "Grundriss" as "Handbook," give a somewhat false idea of the scope of the book.

A. F.

PHYSIOLOGY FOR STUDENTS AND PRACTITIONERS.

A Text-book of Physiology. By Dr. Martin Flack and Dr. Leonard Hill. Pp. viii+800. (London: Edward Arnold, 1919.) Price 25*s.* net.

THE authors of this text-book deserve hearty congratulations on having treated the subject in a somewhat unorthodox way which is decidedly interesting. Whether the work will appeal to the rather whimsical tastes of the medical student or teacher remains to be seen, since, on one hand, it may be regarded as departing, in certain respects, too much from the beaten track of examination requirements, and, on the other, cannot by any means be regarded as a cram-book for rapid revision. It is, nevertheless, written expressly for the use of medical students and practitioners, to the latter of whom it should appeal strongly.

The authors, as teachers of long experience and wide repute, have a right to record their general attitude to the subject in the form of a text-book, but it is almost certain that many teachers will disagree with them regarding the balance of the various sections of the work. Among the best features of the book are the clearness of the tables and schemes, and the great wealth of illustrative detail drawn from the most varied sources (pp. 500, 633, 771, for instance). The chemical parts are treated with brevity, and contain some statements that will not be generally accepted. Thus (p. 31) colloids are said to exert no osmotic pressure; again (p. 85), it is questioned whether amino-acids are normal constituents of blood plasma; on p. 93 the chemistry of formation of methæmoglobin is unorthodox.

One of the most fully treated sections is that dealing with the circulation; there are, however, some errors in this portion—for instance, in the description of the heart-lung preparation and in

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the account of the cardiometer (Fig. 68); it is also unfortunate that reference is not made to the term "premature contraction" as an alternative to "extra systole," as the latter is objected to by some authorities. These small points are chosen as illustrating the kind of thing which can be readily altered in subsequent editions. The question of the general balance of the book is largely a matter of opinion, and probably no two readers will agree as to the chapters which might be considered as inadequately treated; to the present reviewer those on the central nervous system, the kidney, and the physiology of muscle and nerve appear to require expansion. Histological considerations are omitted, no doubt in order to save space, but, nevertheless, there are a large number of illustrations; some of these (52, 53, 336, 391–393, 399, 400) might perhaps have been omitted without much loss, though the excellence of the illustrations is one of the strong features of the book; few of them are likely to be familiar to students from perusal of other text-books.

The book should be much appreciated by advanced students on account of the treatment of some of the sections in a manner new to students' books, and by elementary students owing to the interesting manner in which the subject is treated.

OUR BOOKSHELF.

Biochemical Catalysts in Life and Industry. Proteolytic Enzymes. By Prof. Jean Effront. Translated by Prof. Samuel C. Prescott, assisted by Charles S. Venable. Pp. xi+752. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1917.) Price 23*s*. net.

THE name "biochemical catalysts" is used by the author as an alternative for the more usual name of "enzymes," and has the advantage of calling to mind the fact that these are only a particular class of catalysts. The present work is devoted to those enzymes which act on proteins and their degradation products. It includes also a discussion of the phenomena of immunity, as well as of the processes of coagulation of the blood and milk, processes with regard to which some doubt may be felt as to their being catalytic. Urease is also described.

An excellent and complete account of the subject is given up to the date of the original French work, which appears to be not later than 1912. It is somewhat unfortunate that the translator has not added supplementary notes to bring the book up to date, an addition that would have much increased its value. Indeed, some may be inclined to wonder why the mere translation of the original book was considered necessary. All readers interested should be able to read the French edition. The date of the original work doubtless accounts for some statements which are no longer correct. For example, it is said that enzymes are proteins, and the existence of true anti-bodies to enzymes is accepted. In this connection it may be mentioned that British and American work is rather meagrely referred to. On the whole, however, the book will be found a useful one, especially in that part dealing with those industrial processes in which proteolytic enzymes play an important part. Such are brewing, cheese- and bread-making, tanning, and their use in therapeutics. The fixation of nitrogen by the soil and the question of the value of amino-acids as exclusive nitrogen food for animals are discussed in some detail.

An interesting introductory section will be found. We may note that the author is inclined to favour the theory of surface action rather than that of the formation of intermediate compounds of a chemical nature. W. M. B.

Formulaire de l'Electricien et du Mécanicien. By Hospitalier et Roux. Vingt-neuvième édition (1919). By Gaston Roux. Pp. 11+1485. (Paris: Masson et Cie, 1919.) Price 20 francs.

THE older generation of electricians are well acquainted with the earlier editions of this work; and much of our standard nomenclature, as well as many of the symbols in everyday use, is due to Hospitalier. Nowadays numerous other pocket-books partially fulfil the functions of a book of reference for electricians, but not any of them are so complete or so well arranged as this book. We are inclined to grumble at its size—it contains now nearly 1500 pages—but it is difficult to find anything that might be cut out with advantage, and there are many subjects, like wireless telegraphy and telephony, which one would like to see included.

The first 500 pages are on purely academic subjects—mathematics, physics, dynamics, etc. —and enable the engineer to refresh his memory of his college studies. The next 600 pages are on electro-technical subjects, and the remainder of the book contains French official documents, a comparison of which with our own Board of Trade regulations is very instructive. A complete index is given.

In several places theorems have been abbreviated in order to save space, with unfortunate results. For instance, the theorems on the design of networks are almost unintelligible. On p. 856 we cannot understand what Santarelli's theorem is. In the first theorem by Bochet there is a fairly obvious misprint in the final formula. In the second it is not stated what condition the conductors have to fulfil in order that their mass may be a minimum; the formulæ given, therefore, may well be misleading. From the 1909 edition we find that the condition they must satisfy is that the sum of the voltage drops is constant. This is quite unpractical. The real condition is that the power expended in them should be a minimum when the maximum voltage drop is fixed. The solution of this problem does not agree with that given on p. 857. A. R.

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